

# PATENT ABSTRACTS OF JAPAN

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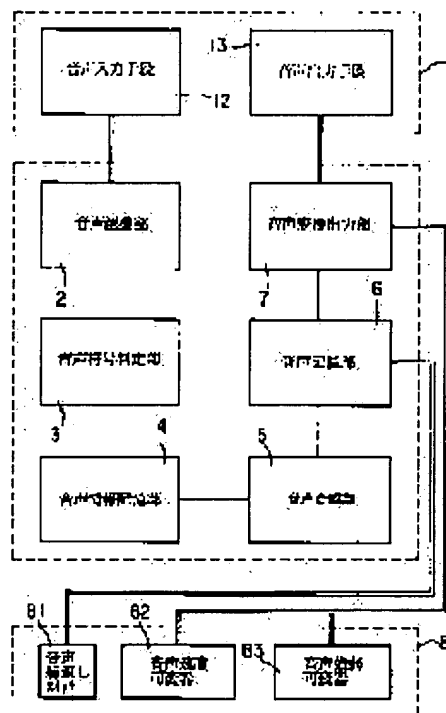
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## (54) PORTABLE SPEECH RECOGNITION OUTPUT ASSISTING DEVICE

(57)Abstract:

PURPOSE: To correctly recognize an inarticulate voice that a handicapped person speaks and to output a speech signal including the sensation of the voicing person.

CONSTITUTION: This portable speech recognition output assisting device is provided with a speech input/output device 1 which has a speech input means 12 and a speech output means 13, a speech recognition part 2 which recognizes a voice print, an intonation, a pitch, and a generated sound from a vibration frequency signal inputted to the speech input means 12, a speech code decision part 3 which stores plural standard speech patterns and speech codes corresponding to the patterns, compares a speech code regarding the recognized generated sound with the stored speech codes, and outputs speech information on the voice print, intonation, pitch, etc., in addition to the standard speech pattern corresponding to the speech code when both the speech codes match each other, a speech synthesis part 5 which puts the standard speech pattern and voice print together and adds the intonation of the sound to synthesize a sound, and a speech conversion output part 7 which outputs the synthesized sound to a speech signal from the speech output means 13.



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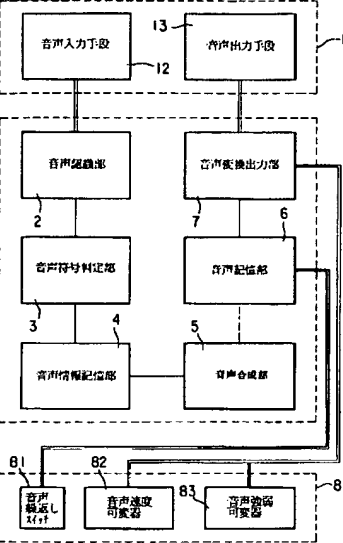
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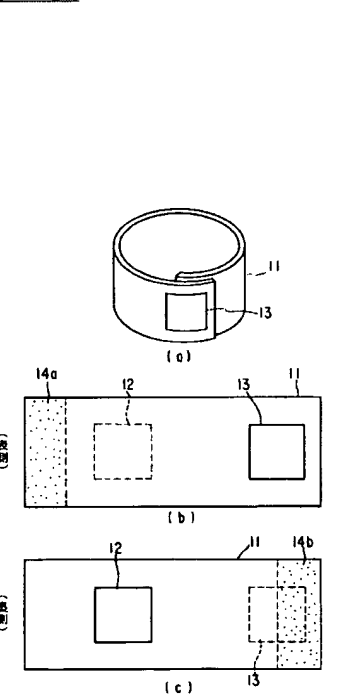
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DRAWINGS

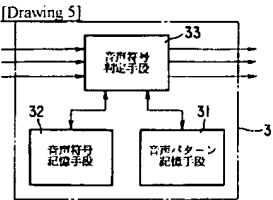
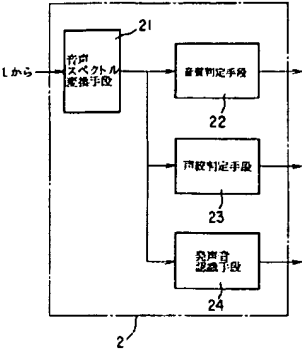
[Drawing 1]



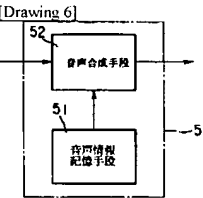
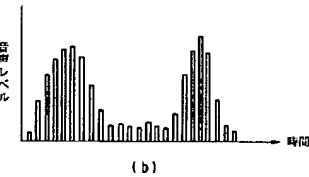
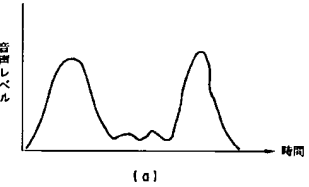
[Drawing 2]



[Drawing 3]



[Drawing 4]



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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The functional block diagram showing one example of the portable speech recognition output auxiliary device concerning this invention.

[Drawing 2] Drawing showing the composition of the voice-input/output equipment shown in drawing 1 .

[Drawing 3] The functional block diagram which materialized the speech recognition section shown in drawing 1 .

[Drawing 4] Drawing explaining the speech recognition by the speech recognition section.

[Drawing 5] The functional block diagram which materialized the voice sign judging section shown in drawing 1 .

[Drawing 6] The functional block diagram which materialized the speech synthesis section shown in drawing 1 .

[Description of Notations]

1 [ -- The voice sign judging section, 4 / -- The speech information storage section, 5 / -- The speech synthesis section, 6 / -- The phonetic-memory section, 7 / -- The voice conversion output section, 8 / -- A voice output controller, 11 / -- A wearing object, 12 / -- A voice input means, 13 / -- A voice output means, 81 / -- A voice recurrence switch, 82 / -- A voice speed adjustable machine, 83 / -- Voice strength adjustable machine. ] -- Voice-input/output equipment, 2 --

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the portable speech recognition output auxiliary device which those who solve and utter not clear voice, such as for example, a vocal cord extraction person and a physically handicapped person, use, and makes carrying possible especially easily with respect to a suitable portable speech recognition output auxiliary device, and recognizes not clear voice appropriately, and can be used for assistance of conversation.

[0002]

[Description of the Prior Art] The conventional voice recognition unit carries out comparison collating of the standard voice pattern of a large number which memorize the standard voice pattern of a large number corresponding to the voice which a healthy person utters beforehand, and are beforehand remembered to be the voice patterns uttered from the healthy person's mouth, and if there is a standard voice pattern which is in agreement with the voice pattern which a healthy person utters, recognizing the voice which a healthy person utters from the standard voice pattern concerned is performed.

[0003] There are a method reproduced when it is equipment with which a voice synthesizer outputs voice on the other hand, and recording the voice which announcer utters, compressing and recording it on a low bit by tools of analysis and outputting further, and a rule composite system which combines a single sound corresponding to the Japanese syllabary to input, and superimposes an accent and intonation. The former is used as an output of an audio response unit, and is used in the order entry field combining PB input of a push-button phone. The technology changed into direct-sound voice from the text of Japanese and English is developed, and the place of the latter expected to development of future technology is large.

[0004]

[Problem(s) to be Solved by the Invention] However, the conventional voice recognition unit cannot be recognized at all about the voice uttered by those who are performing speech recognition from the voice pattern uttered from a healthy person's mouth, for example, extracted vocal cords by the operation etc., those who lost the tongue by the lingual cancer, the non-healthy person who utters not clear voice. Since the reason does not utter voice from a mouth from the first in the case of those who extracted vocal cords since recognition not only becomes impossible, but air vibration of the voice uttered from a mouth was detected in order to utter not clear voice, or those who lost the tongue by the lingual cancer, it becomes impossible applying it.

[0005] In addition, although many and unspecified speech recognition will become possible depending on a future technical progress situation and the various equipments which used the voice recognition unit will be used in everyday life, it is thought anyway that it is development of equipment effective in a healthy person. Therefore, since an audio generating speed is slow, even if the voice of the non-healthy person with various handicaps is not clear, or new equipment is developed with much trouble, it is thought that it is very difficult to fully master it.

[0006] On the other hand, in the case of the aforementioned voice synthesizer, if the sound signal which was filled with much language which an individual utters, or feeling does not become but it sees from a viewpoint of talking, it is still inadequate.

[0007] this invention was not made in view of the above-mentioned actual condition, and aims at those who cannot utter voice from a mouth offering the portable speech recognition output auxiliary device which can be inputted certainly for the signal equivalent to voice.

[0008] Moreover, other purposes of this invention recognize correctly the not clear voice which a non-healthy person utters, and are to offer the portable speech recognition output auxiliary device which realizes speech synthesis including the sentiment of those who utter voice.

[0009] Furthermore, other purposes of this invention are to offer the portable speech recognition output auxiliary device which generates a suitable sound signal, taking into consideration the situation of a non-healthy person's body. Furthermore, other purposes of this invention are to offer the portable speech recognition output auxiliary device which the non-healthy person could equip easily and was rich in operability.

[0010]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, invention corresponding to a claim 1 The voice input means of the shape of flatness which detects vibration generated from the oscillating generating object concerned in the rear-face side of the wearing object of the shape of a strip of paper formed with the cloth of the absorption-of-sound nature twisted and fixed to an oscillating generating object, and is changed into an electric oscillation frequency signal is attached. It is the portable speech recognition output auxiliary device which has voice-input/output

equipment which attached the voice output means of the shape of flatness which furthermore outputs the sound signal according to the aforementioned oscillation frequency signal to the front-face side of the aforementioned wearing object. [0011] Next, the voice-input/output equipment which has a voice output means to output the sound signal according to the oscillation frequency signal inputted by voice input means for invention corresponding to a claim 2 to detect vibration generated from an oscillating generating object, and to output an electric oscillation frequency signal, and this voice input means, The speech recognition section which recognizes the strength of a voiceprint and sound and height, and generating sound from the oscillation frequency signal inputted from the aforementioned voice input means, When the aforementioned voice sign which the voice sign corresponding to two or more standard voice patterns and patterns concerned is memorized beforehand, and has already been remembered to be a voice sign concerning the generating sound recognized by the aforementioned speech recognition section is compared and both the voice sign is in agreement, It is the portable speech recognition output auxiliary device which prepared the voice sign judging section which outputs the speech information which reads the standard voice pattern corresponding to the aforementioned voice sign, and consists of strength, height, etc. of the standard voice pattern concerned, the aforementioned voiceprint, and sound.

[0012] Invention corresponding to a claim 3 to next, the requirements for composition of invention corresponding to a claim 2 The speech synthesis section which compounds the aforementioned standard voice pattern and the aforementioned voiceprint which are newly outputted from the aforementioned voice sign judging section, attaches the strength and height of the aforementioned sound further, and creates composite tone, It is the portable speech recognition output auxiliary device which comes to add the voice conversion output section which changes into a sound signal the composite tone created in this speech synthesis section, and is outputted from the aforementioned voice output means.

[0013] Invention corresponding to a claim 4 to furthermore, the requirements for composition of invention corresponding to a claim 2 The speech synthesis section which compounds the aforementioned standard voice pattern and the aforementioned voiceprint which are newly outputted from the aforementioned voice sign judging section, attaches the strength and height of the aforementioned sound further, and creates composite tone, The phonetic-memory section which memorizes the composite tone created by this speech synthesis section, The voice conversion output section which changes into a sound signal the composite tone memorized by this phonetic-memory section, and is outputted from the aforementioned voice output means, The voice recurrence switch which reads the composite tone memorized by the aforementioned phonetic-memory section, and is made to output repeatedly from the aforementioned voice output means, It is the portable speech recognition output auxiliary device which comes to add the voice speed adjustable means which carries out adjustable [ of the speed of the sound signal outputted from the aforementioned voice conversion output section ], and the voice strength adjustable means which carries out adjustable [ of the sound signal level outputted from the aforementioned voice conversion output section ], and attaches strength.

[0014] Furthermore, the voice-input/output equipment portion into which invention corresponding to a claim 5 has a voice input means and a voice output means, A main frame portion with the speech recognition section, the voice sign judging section, and the voice conversion output section, The voice repeat switch which reads the composite tone memorized by the aforementioned phonetic-memory section, and is made to output repeatedly from the aforementioned voice output means, It is the portable speech recognition output auxiliary device divided into a part for a voice controller with the voice speed adjustable means which carries out adjustable [ of the speed of the sound signal outputted from the aforementioned voice conversion output section ], and the voice strength adjustable means which carries out adjustable [ of the sound signal level outputted from the aforementioned voice conversion output section ], and attaches strength.

[0015]

[Function] Invention corresponding to a claim 1 therefore, by having provided the above meanses By having used the cloth of absorption-of-sound nature for the oscillating generating object, for example, the wearing object twisted and fixed to a non-healthy person's neck, and having attached flatness-like a voice input means and a voice output means in the rear-face [ of a wearing object ], and front-face side individually, respectively The influence of noise which enters from the voice uttered from a mouth or the outside can be prevented, moreover the burden to a non-healthy person's throat is mitigated, and vibration uttered from a direct throat can be inputted certainly.

[0016] Next, the speech recognition section recognizes a voiceprint, the strength of sound, the height of sound, and phonation sound from the oscillation frequency signal inputted from a voice input means, and sends out invention corresponding to a claim 2 to the voice sign judging section. In this voice sign judging section, since the voice sign corresponding to two or more standard voice patterns and patterns concerned is memorized beforehand When the voice sign already remembered to be a voice sign concerning the generating sound sent from the speech recognition section is compared and both the voice sign is in agreement, Since the speech information which reads the standard voice pattern corresponding to the voice sign, and consists of strength, height, etc. of the standard voice pattern concerned, the aforementioned voiceprint, and sound is outputted The standard voice pattern changed into the long language used for conversation etc. every day from the short language which can recognize correctly also with the not clear voice which a non-healthy person utters, and a non-healthy person can be outputted easily.

[0017] Furthermore, invention corresponding to a claim 3 has the same operation as invention corresponding to a claim 2, and also Since the standard voice pattern sent from the voice sign judging section in the speech synthesis section and the aforementioned voiceprint are compounded, the strength of sound and height are attached further and composite tone is created Since it can synthesize voice including sentiment, composite tone is moreover changed into a sound signal in the sound signal conversion output section and it outputs from the aforementioned voice output means, the sound signal

accompanied by sentiment expression can be outputted.

[0018] Furthermore, invention corresponding to a claim 4 can output the same sound signal, without uttering voice from the beginning, even when asked again by the partner, since it has the same operation as invention corresponding to a claim 2 and a claim 3, and also a voice recurrence switch is operated, composite tone is again read from the aforementioned phonetic-memory section and it outputs repeatedly from a voice output means. Moreover, a sound signal can be outputted at a speed intelligible for a healthy person by carrying out adjustable [ of the output speed of a sound signal ] by the voice speed adjustable means. Moreover, since adjustable [ of the sound signal level ] is carried out and strength is attached and outputted by the voice strength adjustable means, a sound signal intelligible for a healthy person can be outputted similarly.

[0019] Furthermore, the voice-input/output equipment portion into which invention corresponding to a claim 5 has a voice input means and a voice output means, By dividing into a part for a main frame portion with the speech recognition section, the voice sign judging section, the sound signal conversion output section, etc., and a voice controller with various adjustment functions A voice-input/output equipment portion is twisted around a non-healthy person's neck, the pendant of the main frame portion is carried out to a part for the lumbar part of a fuselage etc., it can carry easily and a part for a voice controller can be easily operated, if it has at hand and is made to operate it.

[0020]

[Example] Hereafter, the example of this invention is explained with reference to a drawing. Drawing 1 is the block diagram showing the composition of this invention equipment. In \*\*\*\*, 1 is voice-input/output equipment, and as this shows drawing 2, a wearing object 11 of cloth like the corset twisted around a neck is used at the times, such as a whiplash. A voice output means 13 to output the voice input means 12 and sound signal which incorporate directly vibration uttered from a throat is attached in the proper part of this wearing object 11, and since it twists and fixes to a neck further, pieces of Velcro 14a and 14b are attached in the confrontation side of wearing object both ends. In addition, you may fix using various fixed meanses, for example, hook etc., of the conventional common knowledge of those other than piece-of-Velcro 14a and 14b etc.

[0021] The aforementioned wearing object 11 is created with the cloth which was excellent in absorption-of-sound nature, and absorbs the noise which enters from the voice uttered from a mouth by this, or the outside, and it is made not to affect the aforementioned voice input means 12 like the curtain ground which intercepts external noise. The voice input means 12 is evenly attached in the background (inside) side section of the wearing object 11, and changes and outputs vibration uttered from a throat to an electrical signal. Thus, by carrying out flattening, it is easy to get used to the wearing object 11, and there is no feeling of oppression to a throat, as a result the burden to a throat can be mitigated. On the other hand, a flat loudspeaker is attached by the voice output means 13 like [ the voice input means 12 ] the side-front (outside) side section of an opposite side 11, i.e., a wearing object. Thus, by attaching a flat loudspeaker in the transverse plane on the same vertical line as a mouth, the burden to a throat is mitigated, and if it talks and sees from a partner, the state where voice emits from a mouth will be made. Moreover, this voice output means 13 shall be attached in the natural installation state which is not conspicuous as long as it is all out by devising a proper device to a wrap and the color of the voice output means 13 for the wearing object 11, an affiliated color, or a proper material.

[0022] 2 is the speech recognition section which recognizes the feature of an individual voiceprint, the strength of sound and height, and the right phonation from the voice oscillation frequency signal inputted from the voice input means 12. This speech recognition section 2 consists of the voice spectrum conversion means 21, the tone-quality judging means 22, a voiceprint judging means 23, and phonation sound recognition means 24 grade, as shown in drawing 3. This voice spectrum conversion means 21 is changed into a voice spectrum as shown in drawing 4 (b) by sampling a voice oscillation frequency signal as shown in drawing 4 (a) with a predetermined period. Although it means in [ each / of a voice spectrum / component / the vertical direction from reference level ] level how much the tone-quality judging means 22 judges the strength of a voice spectrum to sound, and height, and reference level beforehand predetermined in the strength of sound was set up, among those it is separated and the height of sound is dependent on the frequency of sound on the other hand, the level of each [ of a voice spectrum ] component is expressed chiefly here. The voiceprint judging means 23 extracts the frequency component level of a voice spectrum, and the phonation sound recognition means 24 determines phonation sound from the distribution state of a voice spectrum, and it changes and outputs it to the character code corresponding to the phonation sound, for example, "A", "I", and that code. And the data judged by these judgment meanses 22-24 are outputted serially, and are sent to the voice sign judging section 3.

[0023] This voice sign judging section 3 compares the voice sign already remembered to be this voice sign, both the voice sign becomes the same, solves [ a standard voice pattern and the voice sign corresponding to it are memorized beforehand, the character code (voice sign) which is the right phonation sound by which speech recognition was carried out with the phonation sound recognition means 24 is taken out, ] it, and it has the function which outputs the standard voice pattern corresponding to it. It is constituted by a voice pattern storage means 31 to specifically memorize a standard voice pattern as shown in drawing 5, a voice sign storage means 32 to memorize the voice sign corresponding to each standard voice pattern of this voice pattern storage means 31, and the voice sign judging means 33.

[0024] This voice sign judging means 33 changes the data about the strength of the sound from the aforementioned tone-quality judging means 22, and height, and the feature data of the voiceprint from the voiceprint judging means 23 into the state of the waiting for a buffer memory. About the voice sign of the right phonation sound recognized with the phonation sound recognition means 24 If the same as that of the voice sign which carries out the comparison reference of the voice sign of a large number memorized by the voice sign concerned and the voice sign storage means 32, and has already been memorized The standard voice pattern corresponding to a voice sign is taken out from the voice pattern storage means 31, and

it memorizes in the speech information storage section 4 with the data which are already in the state of the waiting for a buffer memory. At this time, you may also memorize simultaneously the voice sign of the generating sound of the generating sound recognition means 24. When the voice sign already remembered to be the voice sign recognized by the phonation sound recognition means 24 on the other hand becomes inharmonious, the voice sign of the phonation sound recognized with the phonation sound recognition means 24 is outputted.

[0025] In addition, the standard voice pattern memorized by the aforementioned voice pattern storage means 31 is a pattern equivalent to the language used in everyday conversation, such as "good morning", "thank you", and "good-bye." That is, by changing into long language from a short voice sign, even if a non-healthy person does not utter all language, it is patternizing possible [ conversation ] enough.

[0026] After the aforementioned speech information storage section 4 stores temporarily speech information, such as a voice sign of the generating sound recognized if needed [ a standard voice pattern and if needed ] concerning the feature of a voiceprint, the strength of sound, the height of sound, and phonation sound, it is sent out to the speech synthesis section 5.

[0027] A speech information storage means 51 to memorize the speech information sent from the speech information storage section 4 in this speech synthesis section 5 as shown in drawing 6 , By compounding a standard voice pattern and the feature data of a voiceprint among the speech information memorized by this speech information storage means 51, and attaching the strength of sound, and the height of sound to the composite tone which starts further The composite tone recovery-ized completely is made and it consists of speech synthesis meanses 52 to memorize in the consecutive phonetic-memory section 6.

[0028] 7 is the voice conversion output section and this has the function which reads the composite tone information memorized by the phonetic-memory section 6, changes into the analog signal in which a voice output is possible, and outputs voice from the voice output means 13.

[0029] Furthermore, the voice output controller 8 is formed in this equipment. The reason for having formed this voice output controller 8 has the content of conversation in enabling it to transmit suitable for the other party according to a non-healthy person's situation. That is, when the sound signal outputted from the voice output means 13 is asked again from the other party at once, in order to make the voice output controller 8 output composite tone repeatedly from the phonetic-memory section 6, the voice recurrence switch 81 which performs read-out operation is formed in it. Since it is very serious that a non-healthy person utters the same voice from the beginning, this is for mitigating the burden.

[0030] Moreover, the voice speed adjustable machine 82 and the voice strength adjustable machine 83 are formed in this voice output controller 8. It carries out adjustable [ of the speed of a sound signal ] by incorporating the analog primary phase lead lag network which used the capacitor etc., and connecting a primary phase lead lag network with the voice conversion output section 7 side too hastily suitably with the voice speed adjustable vessel 82 beforehand. Since a non-healthy person's phonation speed does not not necessarily have early, this is for making it the speed which changes suitably the output speed of the composite tone outputted from the voice output means 13, and a healthy person tends to catch. Moreover, the voice strength adjustable machine 83 attaches and outputs strength to a sound signal by carrying out adjustable [ of the level of the sound signal by the side of the voice conversion output section 7 ], or carrying out adjustable [ of the amplification factor ]. This is for making it easy to attach strength to the sound signal outputted from the voice output means 13 even place [ with much external noise ], and to catch.

[0031] Next, operation of the equipment constituted as mentioned above is explained. First, after a non-healthy person twists the wearing object 11 of voice-input/output equipment 1 around a neck, the piece-of-Velcro portion prepared in the ends confrontation side of the wearing object 11 is forced, and it fixes. At this time, it sets up so that the voice output means 13 attached in the wearing object 11 may come to a transverse-plane position, and the voice input means 12 is set as the position of the flank of the part which is the easiest to incorporate vibration of a throat, for example, a neck. Since the voice input means 12 and the output means 13 are formed in the shape of flatness at this time, it is easy to get used to a neck, and the burden to a throat decreases very much.

[0032] If a non-healthy person generates voice in this state, vibration of the throat of the non-healthy person concerned is incorporated with the voice input means 12, and it changes into an electric oscillation frequency signal, and sends out to the speech recognition section 2.

[0033] Here, after the speech recognition section 2 changes into a voice spectrum the oscillation frequency signal inputted from the voice input means 12 by the voice spectrum conversion means 21, it is sent out to the tone-quality judging means 22, the voiceprint judging means 23, and the generating sound judging means 24. Each [ these ] judgment meanses 22-24 determine the feature and the right generating sound of the strength of sound and the height of sound, and a voiceprint according to the criteria mentioned above, and especially, in the case of generating sound, they are changed at the character code (voice sign) corresponding to generating sound, and they send them out to the voice sign judging section 3 with the strength of sound and the height of sound, and the feature data of a voiceprint.

[0034] In this sign judging section 3, a standard voice pattern is beforehand memorized by the voice pattern storage means 31, and the voice sign corresponding to the aforementioned standard voice pattern is memorized by the voice sign storage means 32, and it is especially saved to the standard voice pattern in the form of the pattern equivalent to the language used in everyday conversation, such as "good morning", "thank you", and "good-bye."

[0035] Therefore, when the character code (voice sign) which is the right phonation sound recognized by the speech recognition section 2 in the sign judging section 3 was received, the voice sign already remembered to be some of the voice sign is compared and both the voice sign becomes the same, The standard voice pattern corresponding to it is read, and it



sends out to the speech synthesis section 5 through the speech information storage section 4 with the data about the strength of the sound from the aforementioned tone-quality judging means 22, and height, and the feature data of the voiceprint from the voiceprint judging means 23.

[0036] Here, once the speech synthesis section 5 memorizes speech information, such as a standard voice pattern sent from the speech information storage section 4, strength of sound, height, and a voiceprint, for the speech information storage means 51, it synthesizes voice with the speech synthesis means 52. After this speech synthesis compounds a standard voice pattern and the feature data of a voiceprint among speech information, makes the composite tone which attached the strength of sound, and the height of sound to the composite tone which starts further, and made the perfect recovery and memorizes it in the phonetic-memory section 6, it is sent to the voice conversion output section 7. In this voice conversion output section 7, the composite tone information memorized by the phonetic-memory section 6 is read, it changes into the analog signal in which a voice output is possible, and voice is outputted from the voice output means 13.

[0037] When asked again at this time, for example, the other party, if the voice recurrence switch 81 is operated, since a non-healthy person will read composite tone information from the phonetic-memory section 6 again, will change into the analog signal in which a voice output is possible in the voice conversion output section 7 and will output voice from the voice output means 13, he can tell the suitable sound signal for the other party, i.e., the content of conversation. Moreover, if output speed of a sound signal is suitably carried out early with the voice speed adjustable vessel 82 when a non-healthy person's phonation speed is slow, it will become easy to catch a healthy person etc. Moreover, sound signal level will be enlarged, and it can output from the voice output means 13, and will become easy to catch a healthy person etc., if adjustable operation of the voice strength adjustable machine 83 is carried out, when there is much external noise similarly, for example.

[0038] Therefore, since the wearing object 11 which should turn into a main part of voice-input/output equipment 1 was created with the cloth excellent in absorption-of-sound nature etc. according to the composition of the above examples, when it twists around a non-healthy person's neck, the noise which it not only gets used completely, but enters from the voice uttered from a mouth or the outside is absorbed, and vibration uttered from a throat can be appropriately inputted from the voice input means 12. And if it attaches so that flatness-like the voice input means 12 and the voice output means 13 may be stuck on the field section of the wearing object 11, it is convenient to carry at lightweight C, the feeling of oppression over a throat etc. is lost, and the burden to a throat can be mitigated. Moreover, the feature of a voiceprint, the strength of sound and the height of sound, and phonation sound are recognized from the oscillation frequency signal inputted from the voice input means 12 in the speech recognition section 2. When the voice sign of this phonation sound, the feature of a voiceprint, the strength of sound, the height information on sound, etc. are sent out to the voice sign judging section 3, the voice sign of a large number beforehand remembered to be voice signs here is compared and both the voice sign is in agreement, The standard voice pattern equivalent to the language used in everyday conversation, such as "thank you" corresponding to the voice sign concerned and "good-bye", is read. Since it was made to send out to the speech synthesis section 5 with the feature of the aforementioned voiceprint, the strength of sound, the height of sound, etc., the standard voice pattern of the long letter which is conversation every day can be outputted from phonation of the first short conversation by the non-healthy person, and the burden of the conversation by the non-healthy person can fully be assisted.

[0039] Furthermore, in the speech synthesis section 5, since the feature of a voiceprint was compounded to the standard voice pattern out of the speech information and the strength of sound and the height of sound were further attached once memorizing various kinds of speech information sent from the voice sign judging section 3 side, composite tone including a non-healthy person's sentiment can be created.

[0040] Furthermore, a suitable sound signal can be outputted, operating it suitably according to a non-healthy person's situation, or the listening comprehension state of the other party, since the voice recurrence switch 81 which repeats and outputs a sound signal, and the voice speed adjustable machine 82 and the voice strength adjustable machine 83 which carries out adjustable [ of the speed or intensity of a sound signal ] were formed.

[0041] In addition, although the above-mentioned example described the whole composition, when it thinks from a viewpoint which a non-healthy person carries easily and operates simply, considering as the following division composition is desirable. That is, the voice-input/output equipment portion which has the voice input means 12 and the voice output means 13, A part for the equipment book soma containing a part for the power supply section which consists of the speech recognition section 2, the voice sign judging section 3, the speech information storage section 4, the speech synthesis section 5, the phonetic-memory section 6, and voice conversion output section 7 grade, If it divides into a part for the voice output controller of the voice recurrence switch 81, the voice speed adjustable machine 82, and voice strength adjustable machine 83 grade If it is made to connect by the signal line suitably, a voice-input/output equipment portion is twisted around a neck, it fixes, the pendant of the part for an equipment book soma is carried out to the waist, and, as for a hamper, it is made by the amount of voice output controller in a hand, and by this, it can carry easily and operability can be raised.

[0042] Moreover, although cloth was used, the wearing object 11 will not be especially limited, if it is a material similar to \*\*\*\* of absorption-of-sound nature, or it. In addition, in the range which does not deviate from the summary, this invention deforms variously and can be carried out.

[0043]

[Effect of the Invention] As explained above, according to this invention, the following various effects are done so. In invention of a claim 1, vibration of a throat can be inputted appropriately, without those who cannot utter voice from a mouth also being able to input the signal equivalent to voice certainly, and pressing a non-healthy person's throat.

[0044] Invention of claims 2 and 3 can recognize correctly the not clear voice which a non-healthy person utters, and can

realize speech synthesis including the sentiment of those who utter voice by moreover compounding the strength of a voice pattern, a voiceprint, and sound etc.

[0045] Next, invention of a claim 4 can perform voice operation suitably in consideration of the situation of a non-healthy person's body according to a partner's listening comprehension condition, and a proper sound signal can be generated. Furthermore, by dividing composition appropriately, a non-healthy person can equip with invention of a claim 5 easily, and it can raise the operability by the non-healthy person.

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[Translation done.]

\* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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CLAIMS

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[Claim(s)]

[Claim 1] The portable speech-recognition output auxiliary device carry out having voice-input/output equipment which attached the voice-input means of the shape of flatness which detects vibration which generates from the oscillating generating object concerned in the rear-face side of the wearing object of the shape of a strip of paper formed of the material of the absorption-of-sound nature which twists and fixes to an oscillating generating object, and changes into an electric oscillation-frequency signal, and attached the voice output means of the shape of flatness which outputs the sound signal according to the aforementioned oscillation-frequency signal to the front-face side of the aforementioned wearing object further as

[Claim 2] The portable speech recognition output auxiliary device characterized by providing the following. Voice-input/output equipment which has a voice output means to output the sound signal according to the oscillation frequency signal inputted by voice input means to detect vibration generated from an oscillating generating object, and to output an electric oscillation frequency signal, and this voice input means. The speech recognition section which recognizes a voiceprint, the strength of sound, height, and generating sound from the oscillation frequency signal inputted from the aforementioned voice input means. When the aforementioned voice sign which the voice sign corresponding to two or more standard voice patterns and patterns concerned is memorized beforehand, and has already been remembered to be a voice sign concerning the generating sound recognized by the aforementioned speech recognition section is compared and both the voice sign is in agreement, The voice sign judging section which outputs the speech information which reads the standard voice pattern corresponding to the aforementioned voice sign, and consists of strength, height, etc. of the standard voice pattern concerned, the aforementioned voiceprint, and sound.

[Claim 3] The portable speech-recognition output auxiliary device which carries out [ having added the speech-synthesis section which compounds the aforementioned standard voice pattern and the aforementioned voiceprint outputted from the aforementioned voice sign judging section in claim 2 publication, attaches both the strength of the aforementioned sound, and both / either or / further, and creates composite tone, and the voice conversion output section which change into a sound signal the composite tone created in this speech-synthesis section, and output from the aforementioned voice output means, and ] as the feature.

[Claim 4] The speech synthesis section which compounds the aforementioned standard voice pattern and the aforementioned voiceprint which are outputted from the aforementioned voice sign judging section in claim 2 publication, attaches the strength and height of the aforementioned sound further, and creates composite tone, The phonetic-memory section which memorizes the composite tone created by this speech synthesis section, The voice conversion output section which changes into a sound signal the composite tone memorized by this phonetic-memory section, and is outputted from the aforementioned voice output means, The voice recurrence switch which reads the composite tone memorized by the aforementioned phonetic-memory section, and is made to output repeatedly from the aforementioned voice output means, The portable speech recognition output auxiliary device characterized by adding the voice adjustable means which carries out adjustable [ of both the speed of the sound signal outputted from the aforementioned voice conversion output section, and both / either or ].

[Claim 5] The speech recognition section which recognizes the strength of a voiceprint and sound and height, and generating sound from the oscillation frequency signal inputted as the voice-input/output equipment portion which has a voice input means and a voice output means from the aforementioned voice input means, Two or more voice signs beforehand remembered to be the voice signs of the generating sound recognized by this speech recognition section are compared. When both the voice sign is in agreement, the standard voice pattern corresponding to the voice sign concerned memorized beforehand is read. The voice sign judging section which generates speech information, such as strength of this standard voice pattern, the aforementioned voiceprint, and sound, and height A main frame portion with the speech synthesis section which compounds strength, height, etc. of these standard voice pattern, a voiceprint, and sound, and the voice conversion output section which changes into a sound signal the composite tone created by this speech synthesis section, and is outputted from the aforementioned voice output means, The voice repeat switch which reads the composite tone memorized by the aforementioned phonetic-memory section, and is made to output repeatedly from the aforementioned voice output means, The portable speech recognition output auxiliary device characterized by dividing into a part for a voice controller with the voice adjustable means which carries out adjustable [ of both the speed of the sound signal outputted from the aforementioned voice conversion output section, and both / either or ].

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- [Translation done.]

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